

UNIVERSITY OF ALBERTA LIBRARY



0 0004 0546 640

*Forest Inventory Series
Report #2*

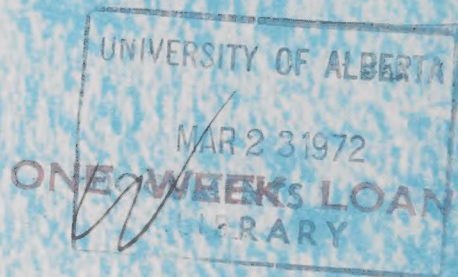
GENERAL SCIENCES

FOREST RESOURCES

of the

Prince Albert Area

of Saskatchewan



SD
2
S25
S252
no. 2
1953

Forestry Branch

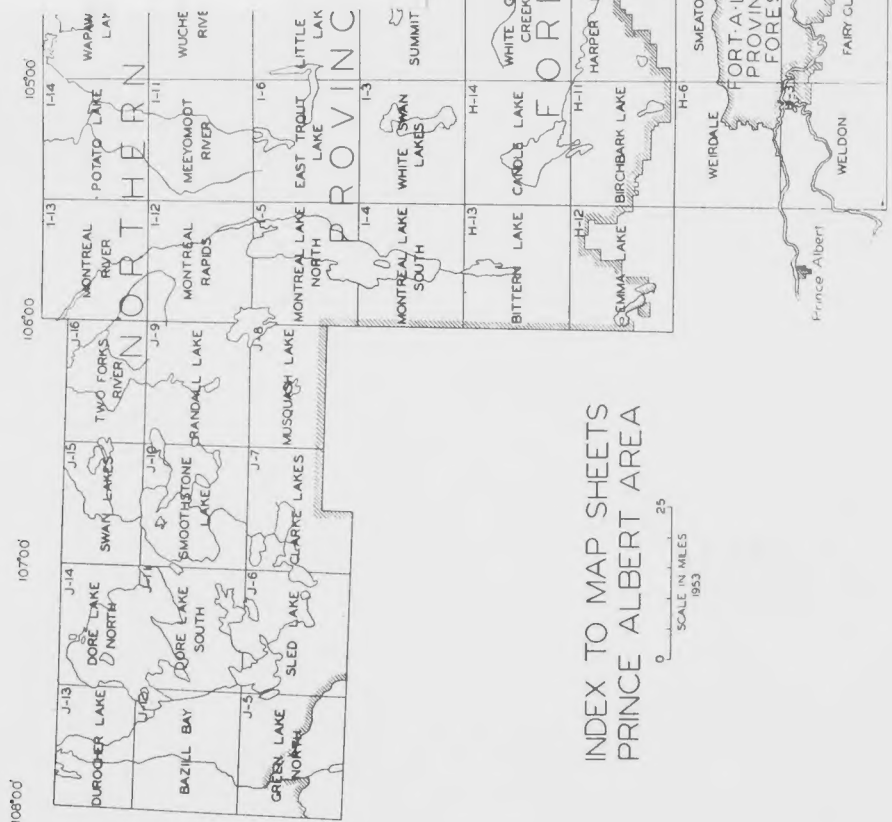
DEPARTMENT OF NATURAL RESOURCES
PROVINCE OF SASKATCHEWAN



1953

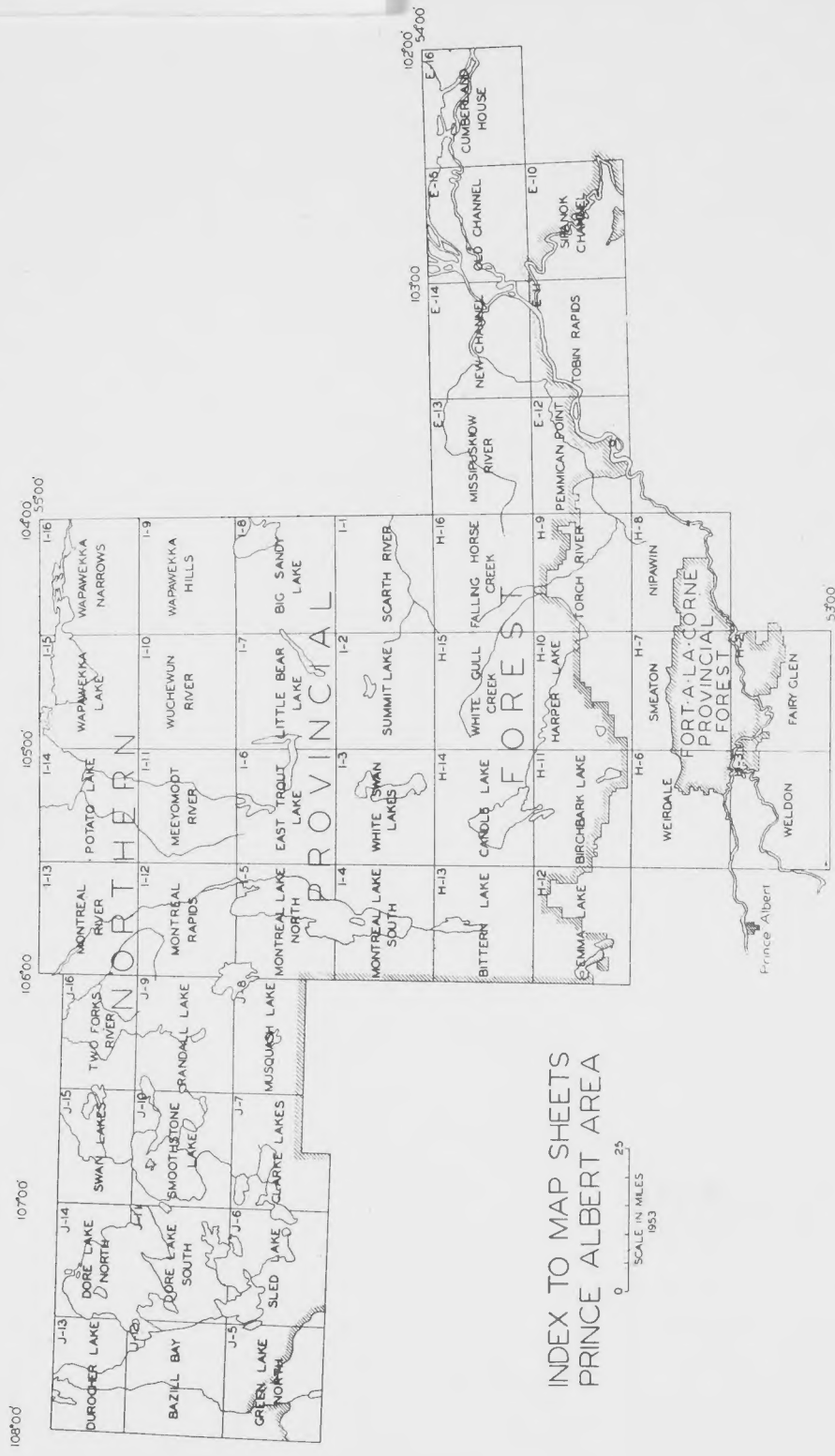
SCI

Ex libris UNIVERSITATIS ALBERTENSIS



INDEX TO MAP SHEETS
PRINCE ALBERT AREA

0 25
SCALE IN MILES
1953



INDEX TO MAP SHEETS PRINCE ALBERT AREA

FOREST RESOURCES

of the

Prince Albert Area

of Saskatchewan

Forest Inventory Series

Report No. 2

DEPARTMENT OF NATURAL RESOURCES
PROVINCE OF SASKATCHEWAN

1953

HON. J. H. BROCKELBANK
Minister

C. A. L. HOGG
Deputy Minister

E. J. MARSHALL
Director of Forests

Prepared by Forest Inventory Division M. N. PALLEY, Forester-in-Charge.

Field inventory, volume tables and computations supervised by J. M. ATKINSON, assisted by D. G. WYLLIE.

Growth surveys by A. KABZEMS.

Photo interpretation by D. E. PRYCE, J. R. McMURDO and H. A. PEACOCK.

Field inventory by S. H. SHANNON, D. E. PRYCE, H. A. PEACOCK, J. M. ATKINSON, J. R. McMURDO, J. P. McKAY, A. G. RUSSELL, H. J. PAUL, D. M. TAYLOR and D. NOWLAN.

Computations by A. G. RUSSELL, R. R. McMILLAN, E. C. WYLDMAN, V. J. STUDER, D. D. DEETS, R. HARVEY, E. W. HEWKO.

Lithographed map production supervised by H. J. PAUL.

Base maps by L. R. KERNAGHAN.

Drafting of maps and charts by S. F. TICKNER.

Report writing by M. N. PALLEY.

Photo Credits—Thanks are extended to T. MORRELL, R. F. ARNOLD, F. BARD, A. KABZEMS and the Northern Wood Preservers Limited for making photographs available.

TABLE OF CONTENTS

| | Page |
|--|------|
| The Saskatchewan Forest Inventory | 5 |
| The Prince Albert Area | 6 |
| The Lumber Industry Ranks First | 8 |
| Pulpwood—Green and Fire-Killed | 9 |
| The North Country is Opening Up | 10 |
| Fire Protection is Emphasized | 11 |
| Poles for Rural Electrification | 12 |
| Other Wood-Using Industries in Prince Albert | 13 |
| Forest Area | 14 |
| Sawtimber Volume | 16 |
| Cordwood Volume | 17 |
| Cubic Foot Volume | 19 |
| Current Growth | 19 |
| Methods of Survey | 29 |
| Accuracy of Data | 30 |
| Definition of Terms | 30 |
| List of Species | 32 |

LIST OF TABLES

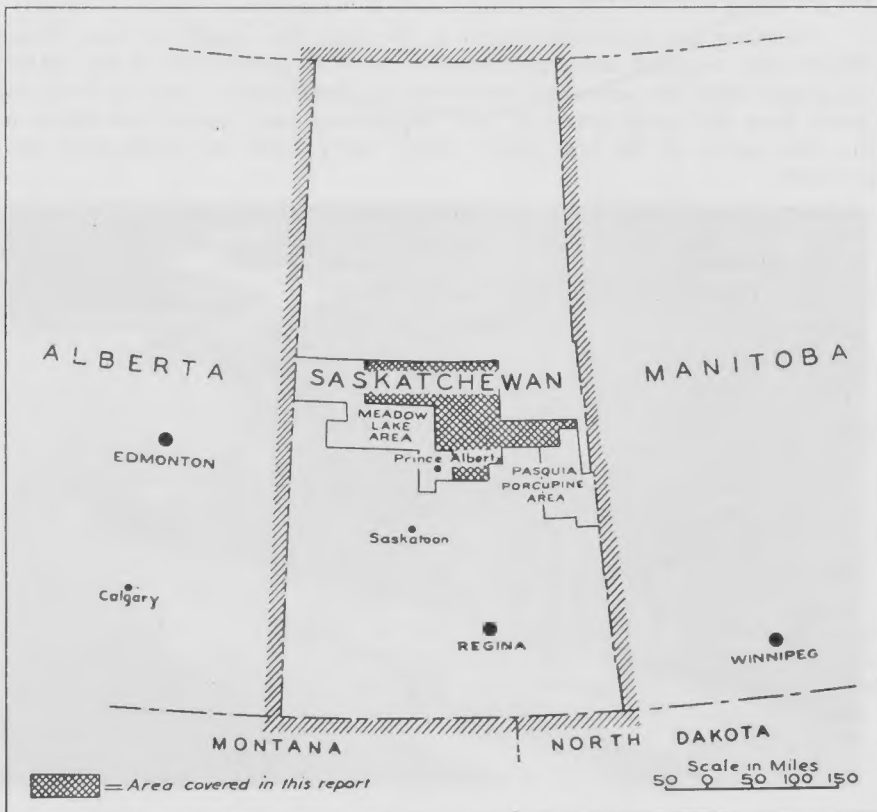
| | Page |
|--|------|
| Table 1. Land classification in the Prince Albert area: 1951 | 20 |
| Table 2. Areas of productive forest land in Provincial Forests of the Prince Albert Area, by cover types and stand-size classes: 1951 | 21 |
| Table 3. Land classification of the Prince Albert area by map sheets | 22 |
| Table 4. Sawtimber volume by species and stand-size classes in Provincial Forests of the Prince Albert area: 1951 | 24 |
| Table 5. Cordwood volume by species and stand-size classes in Provincial Forests of the Prince Albert area: 1951 | 24 |
| Table 6. Cubic foot volume by species and tree diameter groups in Provincial Forests of the Prince Albert area: 1951 | 25 |
| Table 7. Average volume per acre of productive forest by stand-size class and tree diameter groups in Provincial Forests of the Prince Albert area: 1951 | 25 |
| Table 8. Wood volume in Provincial Forests of the Prince Albert area by map sheets: 1951 | 26 |
| Table 9. Periodic annual volume increment by species and tree diameter groups in the Prince Albert area: 1951 | 28 |

THE SASKATCHEWAN FOREST INVENTORY

In fulfillment of a recommendation of the Saskatchewan Royal Commission on Forestry of 1947 an inventory of forest land and timber growing stock is being carried out by the Forestry Branch, Department of Natural Resources, with financial aid since 1951 from the Dominion Government under The Canada Forestry Act.

This publication illustrates one phase of the work of the Forest Inventory Project—securing the basic forest statistics. These statistics arise out of field sampling of forest stands classified on air photographs. Forestry maps lithographed in four colours represent a second phase of the activities of the Inventory. Thirty-four such map sheets have been issued to date. The rate of growth of Saskatchewan's forests is also being investigated, as still another phase of the Forest Inventory. A bulletin on the growth and yield of black spruce in Saskatchewan was published recently.

The Prince Albert area is the second of three areas to be surveyed. The statistics presented apply only to productive forest land in statutory Provincial Forests in the Prince Albert area. The Pasquia-Porcupine report appeared last year and a report on the Meadow Lake area is planned at a later date. Following completion of these three statistical reports, a more comprehensive report on the forest situation in Saskatchewan, including information on growth, drain and problems of utilization will be published.



THE PRINCE ALBERT AREA

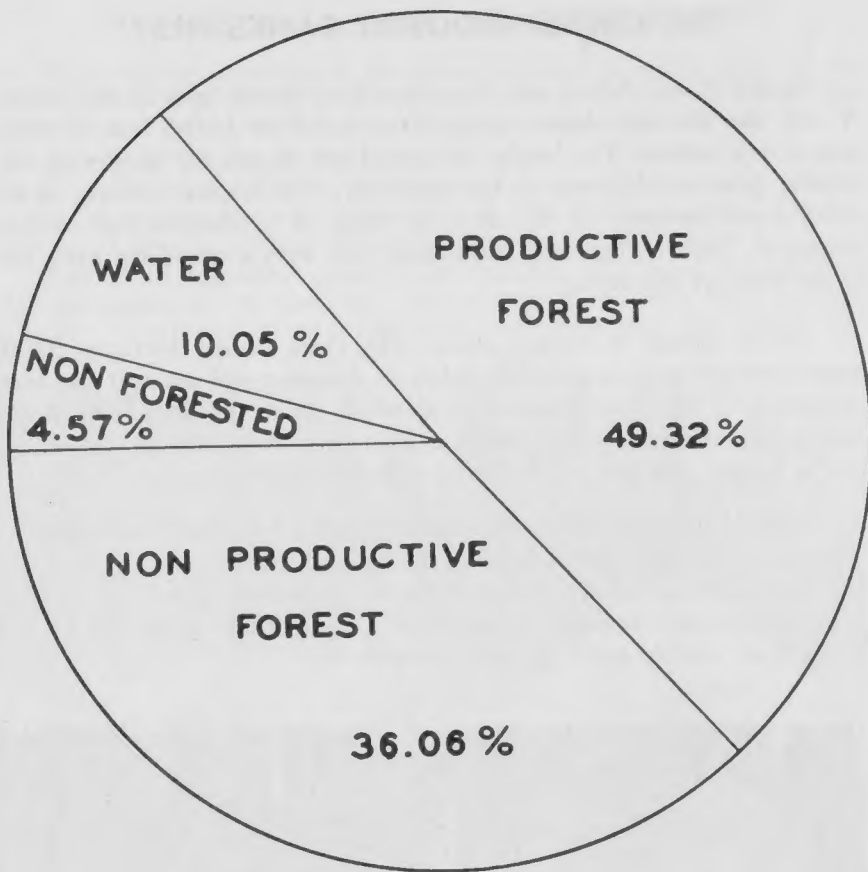
The Prince Albert area, as here described, occupies a portion of the land enclosed between 53 degrees and 55 degrees latitude and 102 degrees and 108 degrees longitude. It has been treated as one unit for inventory purposes, but comprises three sub-divisions which can be distinguished on the basis of stand composition. Reference to the generalized type map in the back cover of this booklet shows a zone of mixed types comparable to the forests of the Pasquia-Porcupine area in some respects. There is also a zone of predominantly coniferous stands in the north central portion of the area, where black spruce and jack pine predominate. Finally, the forests of the lower Saskatchewan River to the northeast have a special hardwood association with a greater variety of tree species and a more luxuriant growth of trees and lower vegetation.

In the Prince Albert area there are 4.3 million acres of productive forest land in Provincial Forests. Non-productive forest land and non-forested land within the Provincial Forest boundaries in the area amount to another 3.6 million acres. The non-productive forest land tends to be concentrated in certain parts of the Prince Albert area where poor drainage is prevalent.

The area takes its name from the city of Prince Albert, the leading railway and population centre of this part of the province, to which most of the area here described is economically tributary. Prince Albert has a population of 17,067 (1951 census) and is located on the North Saskatchewan River, 30 miles above the point where that river joins with the South Saskatchewan.

Farming has advanced about as far into the forests of the Prince Albert area as good land use dictates. Fires of the decade of the 1930's associated with dry years and the influx of thousands of settlers from the south have left large areas of land supporting only young reproduction. In other parts of the area older stands are present in satisfactory proportions.





AREA DISTRIBUTION

(Source - Table 1)

The climate of the area is sub-humid with approximately 16 inches of precipitation annually, more than half of which comes in the period from June to September. The growing season is fairly short but this is balanced by the long summer growing days in this latitude. Extremely low temperatures occur in the winter months. Temperatures as low as 40 degrees below zero Fahrenheit are recorded each year. Winter is favoured as the season for logging over frozen terrain.

The relief of the area is moderate and elevations over the area average about 1,600 feet above sea level. The lowest points in the area to the northeast are below 1,000 feet, while the highest recorded elevations in the coniferous region are approximately 2,200 feet.

THE LUMBER INDUSTRY RANKS FIRST

In the Prince Albert area the sawmill commonly goes to the timber. A mill like the one shown can produce a million board feet of white spruce in a winter. The lumber is hauled out to rail for air-drying and planing prior to shipment to the consumer. The lumber industry is the chief forest industry of the area, in value of production and in men employed. There is one large permanent mill with a round log gang saw at the town of Big River.

White spruce in mature stands like those shown averages 10,000 board feet per acre in trees 10 inches in diameter and over. It has been necessary to limit the production of white spruce to 18 million board feet a year in the Prince Albert district to prevent exhaustion of the supply before younger stands have reached harvesting age.

Skillful felling of trees, like that illustrated here, facilitates skidding of the trees in their full lengths to the mill where they are cut into logs and sawn into lumber. Each tree to be cut is marked by a forest officer. Low stumps and lopping of the branches into small pieces which can decay more readily are regulation practice.



PULPWOOD — GREEN AND FIRE-KILLED

Black spruce pulpwood is the great untapped wood resource of the Prince Albert area. Along with jack pine it could provide northern fibre in abundance for the manufacture of pulp in Saskatchewan.

Cutting of pulpwood fluctuates widely and is controlled by the unstable export market for wood. In recent years the production in the Prince Albert area has varied from five to fifty thousand cords annually. This wood goes to mills in Manitoba, Ontario and Wisconsin.

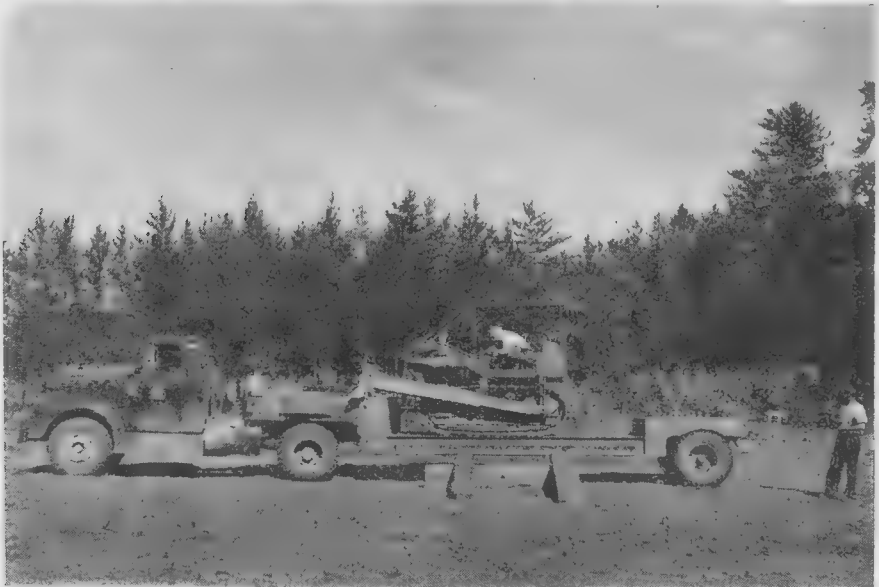
Salvage of fire-killed spruce is encouraged. This class of wood has high acceptance in the trade and can be shipped at lower rates because it is dry. Sap-peeled green wood, after seasoning, also can travel economically to market when the industry is buying.



THE NORTH COUNTRY IS OPENING UP

From the road camp pictured here 34 miles of access road was built into virgin country in the summer of 1952. This new road forms part of a network of 1,500 miles of forest roads and trails being maintained, improved and added to each year. The new roads are making it possible to harvest timber stands in formerly inaccessible areas.

A bulldozer on a special semi-trailer can roll to a forest fire faster than it can travel there under its own power. The Department of Natural Resources owns six such units capable of transporting heavy equipment and operates 26 crawler-type tractors in its road-building and fire-fighting activities.



FIRE PROTECTION IS EMPHASIZED

At the present time fires are fought with bulldozers in the Prince Albert area but there is still a place on the fire-line for a good man with a shovel. Quick action on fires in roadless areas is taken by dispatching parachute fire fighters, the Saskatchewan Smokejumpers, one of whom is pictured here.

During the fire hazard season constant watch is kept at 21 look-out towers overlooking the Prince Albert area. All of these but one are 80-foot steel towers. Air patrols for fire detection are also carried out. Field men of the department attend fire fighting schools to improve their ability to deal effectively with fires. Two-way radio connections are maintained by all look-outs, fire control airplanes, headquarters and often the motor vehicles of the forest officers.

The public is constantly reminded of the need for care with fire through radio and newspaper messages and the observance of a Forest Conservation Week each year. One Conservation Officer devotes his full time to visiting schools adjoining the forest and helping to build a conservation-minded body of young people.



POLES FOR RURAL ELECTRIFICATION

The forests of the Prince Albert area are contributing the poles for farm electrification in Saskatchewan. Production of these poles is at the rate of about 80,000 each year.

In forest stands up to 140 miles in distance from Prince Albert suitable jack pine trees are selected and cut into poles. Following the long truck haul to a wood preserving plant at Prince Albert the poles are peeled and placed in piles for seasoning. They are then pressure-treated with creosote to insure a long life of service and shipped to the points where they are needed.

The pole industry has met a definite local need by utilizing a local raw material and processing it in the province. Pole production has helped to offset the adverse economic effect of a reduced output of lumber and ties.



OTHER WOOD-USING INDUSTRIES IN PRINCE ALBERT

Wood for containers is manufactured at the Prince Albert Box Factory, where grain doors, boxes and cleats are produced. The annual harvest of Saskatchewan grain is shipped out to market in freight cars and each must be closed with a grain door. Production at the Box Factory in a recent year was 9 million board feet and employees numbered 115. Custom planing is also carried on at the plant.

The plywood plant seen in the aerial view is also operating at present at the edge of Prince Albert. It produces utility grades of plywood made from rotary-cut poplar veneer. Much of the output of the plant is sent to eastern Canada for use in floor underlays. The trimmings from the logs are used to power the plant and the cores left after peeling are shipped to a plant outside the province manufacturing wallboard.





FOREST AREA

Softwood cover types occupy more of the productive forest land of the Prince Albert area than either the mixed or hardwood cover types. Of the 4.3 million productive acres, 1.8 million are softwood, largely in the merchantable size class of 30 to 50 feet in stand height. Among the softwoods, the spruce cover types cover more area than do the pine, in the proportion of four to three.

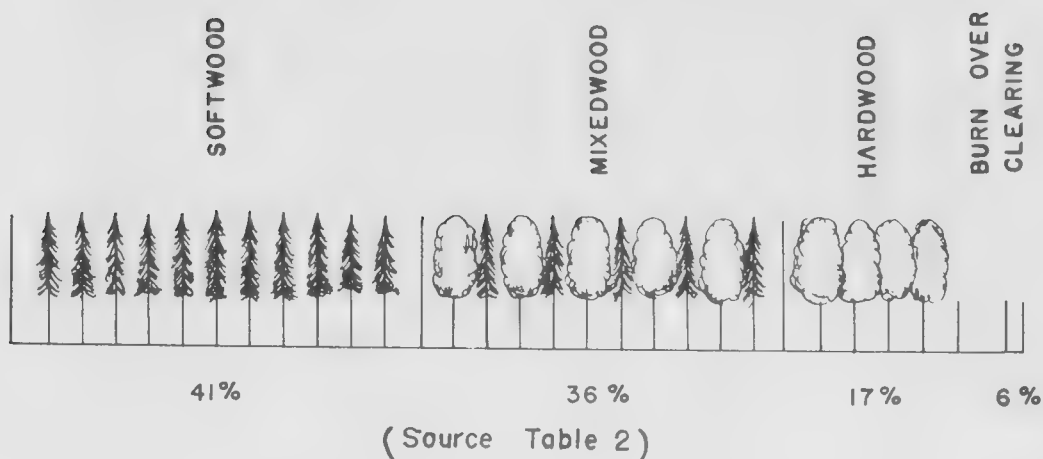
The mixed stands are second most numerous. Large areas in the cordwood and reproduction classes indicate a good representation in the future forest of these desirable and valuable mixed types. Some of the largest and best quality white spruce timber occurs in the mixed types. The pure hardwood cover types have the most even distribution by size classes. Much of the hardwood sawtimber occurs along the flood plains of the Saskatchewan River, over 100 miles downstream from Prince Albert.

Smaller size classes predominate in the Prince Albert area. Nearly three quarters of the productive area is occupied by stands under 50 feet in height. This condition reflects the youth of much of the tree growth present and also the large area of black spruce stands which do not often exceed 50 feet at maturity. Sawtimber stands cover just 125,000 acres or 3 per cent of the productive area. There are 1.5 million acres in the reproduction class, the new growth following the fires of the past few decades.

AREA DISTRIBUTION

BY COVER TYPE

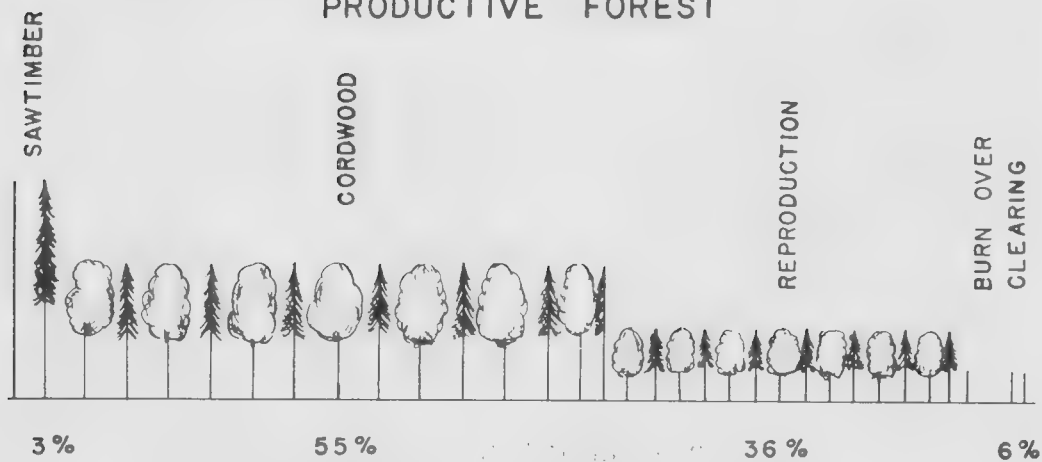
PRODUCTIVE FOREST



AREA DISTRIBUTION

BY SIZE CLASS

PRODUCTIVE FOREST

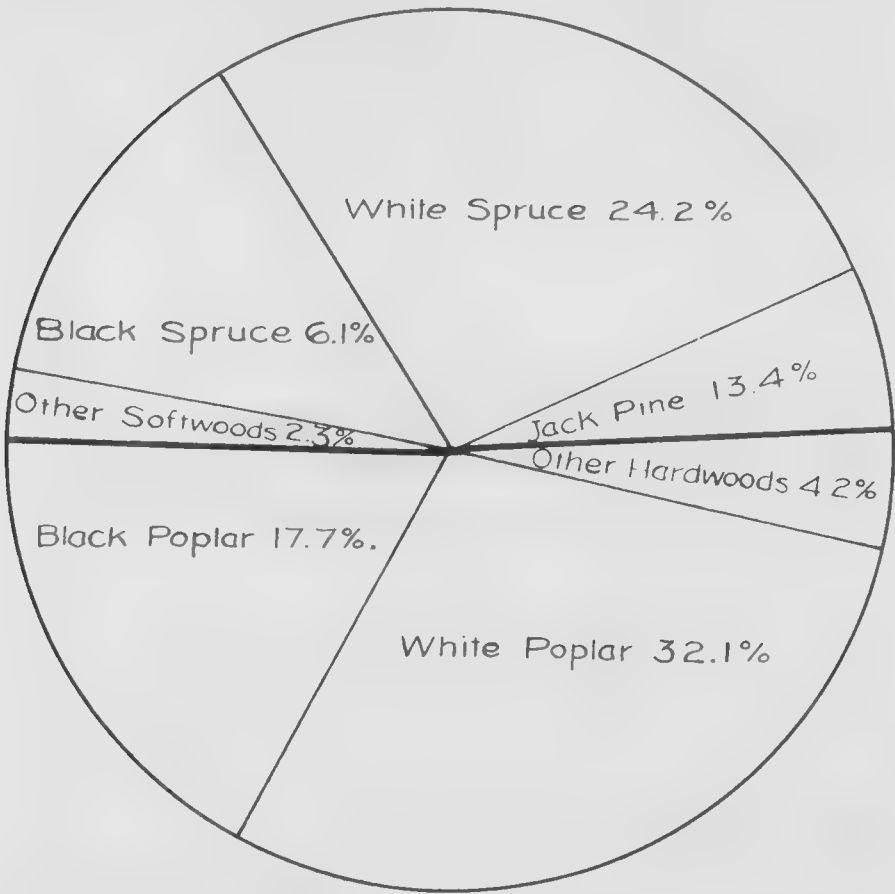


Sawtimber Volume

There is nearly 4 billion board feet of sawtimber in trees 10 inches and over in the Prince Albert area. Of this amount 954 million board feet is white spruce, the species on which the commercial lumber industry is based. Operable volumes of white spruce, which may be roughly equated with the timber in stands 70 feet and over in the air photo classification, amount to just 439 million board feet. The 527 million board feet of jack pine is at present finding its highest use in the form of power poles and railway ties.

An estimate of nearly 2 billion board feet net scale of the poplars includes marginal logs and trees and all grades of material. Many stands which yield good quality poplar lumber can be found.

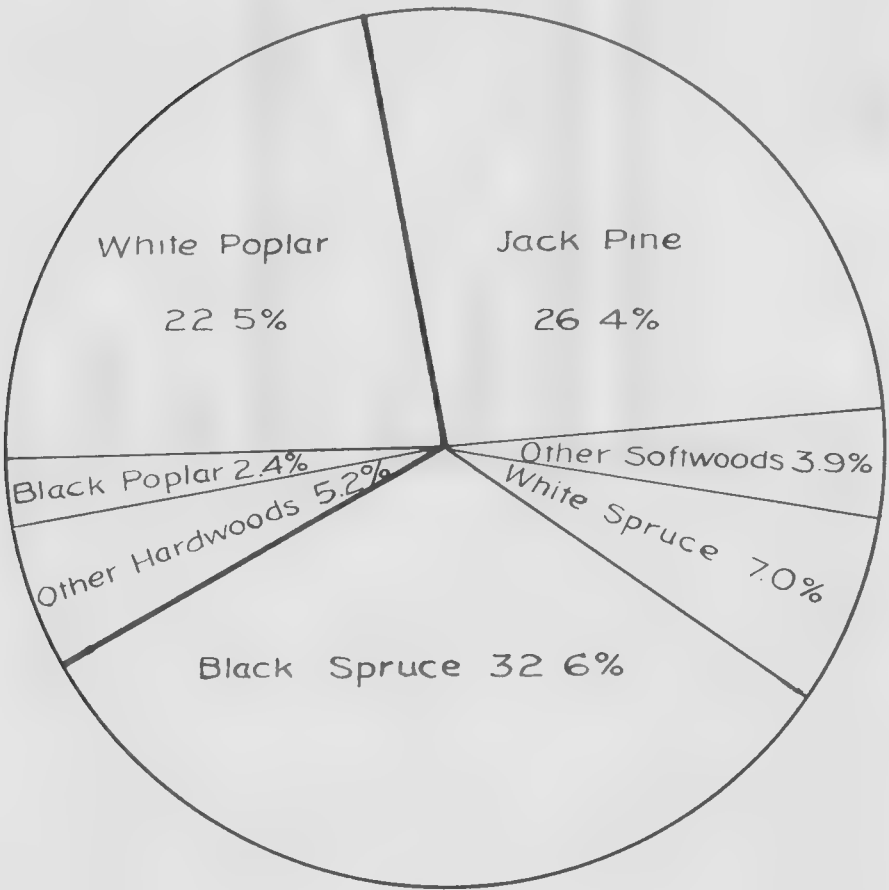
There is an average of 910 board feet of sawtimber per acre, over the whole productive area. In terms of sawtimber areas alone the average volume per acre, softwoods and hardwoods both included, is over 10,000 board feet per acre.



SAWTIMBER VOLUME

Cordwood Volume — Smaller Trees

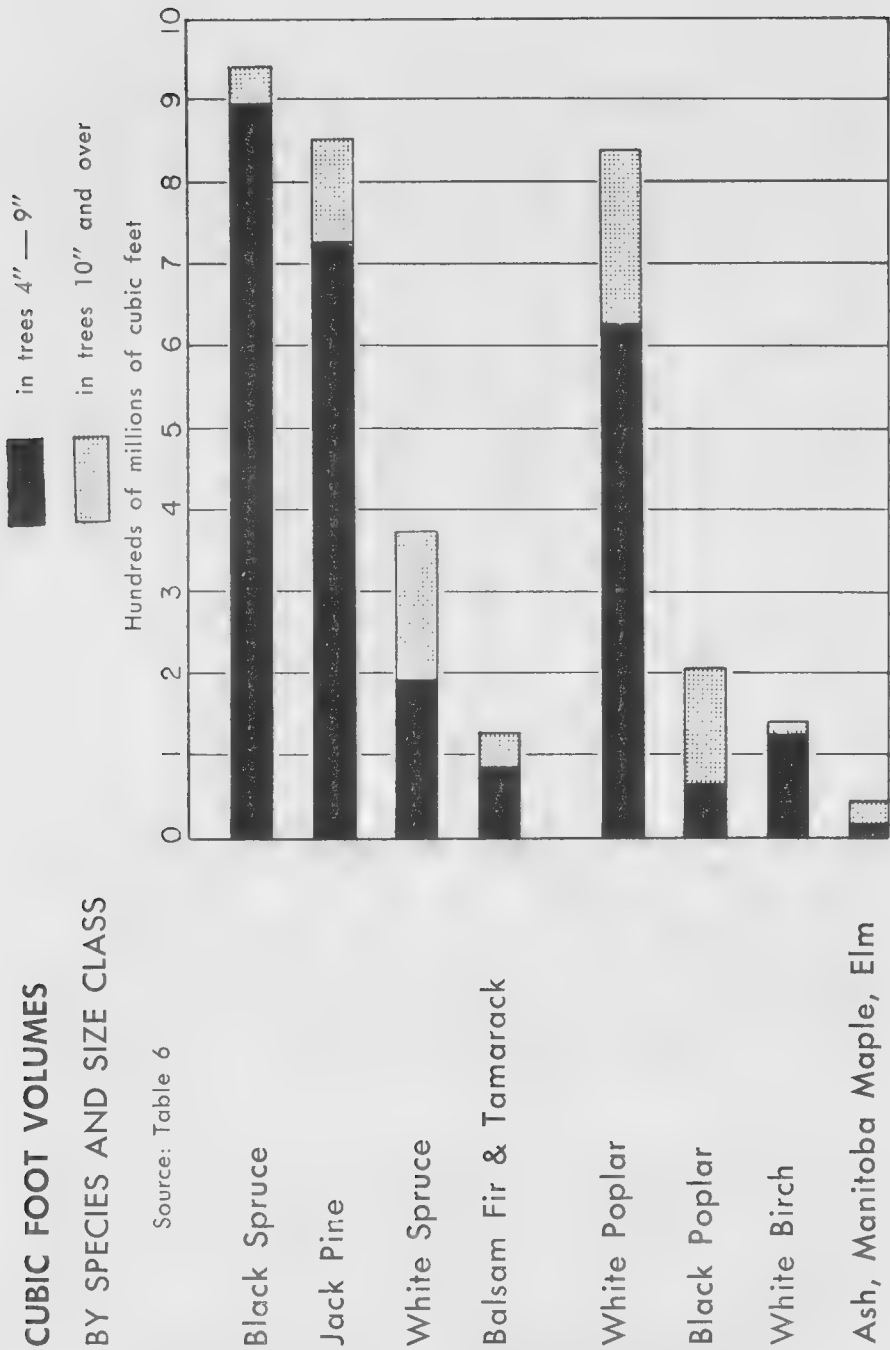
Expressed in standard cords there are 32.4 million cords of wood in trees 4 to 9 inches in diameter. Nearly 13 million cords of the spruces, 8.6 million of jack pine and 8 million cords of the poplars make up most of this total. There is nearly five times as much black spruce in this size-class as white spruce. On the average, every productive acre in the Prince Albert area contains 7.5 cords of wood in trees in the 4 to 9 inch class. The cordwood size-class stands, taken alone, average 12.4 cords per acre in trees under 10 inches in diameter.



CORDWOOD VOLUME

CUBIC FOOT VOLUMES BY SPECIES AND SIZE CLASS

Source: Table 6



Cubic Foot Volume

There are 3.5 billion cubic feet of merchantable wood in the Prince Albert area in all. Two-thirds of this wood is in the softwoods and one-third is in the hardwoods. Black spruce is the leading species. Together with white spruce it makes up 36 per cent of the total timber stand. There is nearly as much jack pine as black spruce. Balsam fir and tamarack amount to only 3.6 per cent of the commercial volume together.

The chief hardwood is white poplar, amounting to one quarter of the total stand of all species. Black poplar at 5.7 per cent and white birch with 4.0 per cent follow. Manitoba maple, elm and green ash are present in very small proportions only.

Cubic foot volumes allow a comparison of the wood in trees 4 to 9 inches in diameter (otherwise expressed in cords) and the wood in trees 10 inches and over in diameter (otherwise expressed in board feet). Such a comparison shows that 78.5 per cent of the wood is in the 4 to 9 inch class. White spruce is the only softwood species in which the volume of trees in the 10 inch and over size-class approaches the volume in the 4 to 9 inch class.

The average stand per productive acre, all size-classes and conditions included, is 811 cubic feet. Sawtimber areas carry 2,425 cubic feet per acre on the average, cordwood areas 1,271 cubic feet and reproduction areas 114 cubic feet.

CURRENT GROWTH

The productive forests of the Prince Albert area covering approximately 4,000,000 acres are putting on growth currently at the rate of 100 million cubic feet annually, after making allowances for natural mortality. Losses due to forest fires and outbreaks of destructive insects and diseases are not allowed for in these growth figures—such losses might reduce the effective growth by perhaps a quarter.

This relatively high rate of growth is an expression of the preponderance of the young and faster growing age classes in the forests of the region. Such a periodic growth rate can be used as a basis for calculations for a period of 10 or 15 years. It should be recalculated at the end of that period of time in the light of the stand conditions which exist at that time.

Size classes and economic possibilities will have a tendency to limit the amount of this growth actually available for cutting. Much of the growth will be concentrated on the smaller trees, whose utilization in the near future will depend on the existence of markets for pulpwood, fence posts and the like. Seventy-two per cent of the jack pine stands, for example, are in the 30 to 50 foot height class. They are fast growing stands 40 to 50 years old with trees up to 8 or 9 inches in diameter as a maximum. Such stands will yield pulpwood, mine props and boxwood, but little in the way of lumber, ties or poles for a number of years to come.

Table 9 shows the distribution of this growth by species and size-classes. Jack pine and black spruce together account for well over half the current increment. For convenience of interpretation growth has been expressed in cords and board feet, as well as in cubic feet. In these units the annual growth is one million cords in trees 4 to 9 inches and 65 million board feet in trees 10 inches and over, in the Prince Albert area.

TABLE 1—LAND CLASSIFICATION IN THE PRINCE ALBERT AREA: 1951

| Class of Land | Amount In Acres | Per cent. of Provincial Forest Area |
|--------------------------------|--------------------|---|
| TOTAL AREA..... | 10,557,822 | |
| Provincial Forests, total..... | 8,768,699 | 100.0 |
| Land: | | |
| Productive Forest .. | 4,325,325 | 49.3 |
| Non-Productive Forest..... | 3,161,580 | 36.1 |
| Non-Forested Land..... | 401,239 | 4.6 |
| Water..... | 880,555 | 10.0 |
| All Other Areas..... | 1,789,123 | |
| Settled Area | 1,655,225 | |
| National Park..... | 104,301 | |
| Indian Reserve..... | 29,597 | |

TABLE 2—AREAS OF PRODUCTIVE FOREST LAND IN PROVINCIAL FORESTS OF THE
PRINCE ALBERT AREA, BY COVER TYPES AND STAND—SIZE CLASSES: 1951
(IN ACRES)

| Cover Type | Total | | Stand—size class | | | |
|--------------------------|-----------|--|--------------------------------------|---------------|---------------|---------------------------------------|
| | Area | Per cent. Produc- tive Forest | Sawtimber Over 70 feet tall | Cordwood | | Reproduc- tion Under 30 feet |
| | | | | 50-70 feet | 30-50 feet | |
| Softwood..... | 1,758,410 | | | | | |
| Spruce..... | 995,577 | 23.0 | 19,661 | 84,970 | 638,776 | 252,170 |
| Pine..... | 762,833 | 17.6 | 1,046 | 100,792 | 522,158 | 138,837 |
| Mixedwood..... | 1,550,971 | 35.9 | 48,076 | 287,864 | 292,505 | 922,526 |
| Hardwood..... | 747,303 | 17.3 | 56,060 | 283,939 | 171,837 | 235,467 |
| All Cover* Types..... | 4,056,684 | | 124,843 | 757,565 | 1,625,276 | 1,549,000 |
| Per Cent. *..... | | 93.8 | 2.9 | 17.5 | 37.6 | 35.8 |

*—Productive forest land of 4,325,325 acres also includes Burn-overs—243,705 acres (5.6%) and cleared areas—24,936 (0.6%).

TABLE 3—LAND CLASSIFICATION OF THE PRINCE ALBERT AREA BY MAP SHEETS
ACRES

| Map Sheet | Area in Provincial Forest | | | | | | |
|-------------------------------|---------------------------|-------------------------|------------------|----------------------|------------------------|--------|------------------------|
| | Total Area | Total Provincial Forest | Total Productive | Per cent. Productive | Productive Forest Area | | |
| | | | | | Softwood | | Burn-over and Clearing |
| | | | | | Spruce | Pine | Mixedwood Hardwood |
| E/10 Sipanok Channel..... | 227,463 | 119,397 | 47,169 | 39.50 | 4,793 | | 7,889 |
| E/11 Tobin Rapids..... | 227,463 | 44,108 | 30,078 | 68.19 | 2,730 | | 19,374 |
| E/12 Pennican Point..... | 227,468 | 138,379 | 76,887 | 55.56 | 17,747 | 6,831 | 7,974 |
| E/13 Missisquoi River..... | 226,105 | 226,105 | 32,632 | 14.43 | 22,818 | 3,566 | 18,485 |
| E/14 New Channel..... | 226,105 | 226,105 | 75,202 | 33.25 | 19,916 | 3,748 | 473 |
| E/15 Old Channel..... | 226,105 | 225,977 | 67,188 | 29.73 | 2,154 | | 15,033 |
| E/16 Cumberland House..... | 226,105 | 226,105 | 45,728 | 20.22 | 1,211 | | 7,019 |
| | | | | | | | 5,054 |
| H/2 Fairy Glen..... | 229,435 | 88,487 | 78,636 | 88.86 | 711 | 35,009 | 10,887 |
| H/3 Weldon..... | 229,435 | 15,229 | 11,695 | 76.79 | 624 | 4,662 | 2,146 |
| H/6 Weirdale..... | 228,802 | 45,145 | 29,274 | 64.84 | 1,238 | 11,363 | 5,240 |
| H/7 Smeaton..... | 228,802 | 138,547 | 112,476 | 81.18 | 8,807 | 59,729 | 1,235 |
| H/8 Nipawin..... | 228,802 | 54,894 | 46,868 | 85.37 | 2,488 | 16,918 | 1,988 |
| H/9 Torch River..... | 227,468 | 72,920 | 58,270 | 79.90 | 6,830 | 2,402 | 2,779 |
| H/10 Harper Lake..... | 227,468 | 147,757 | 70,488 | 47.71 | 8,391 | 15,834 | 1,442 |
| | | | | | | | 3,223 |
| H/11 Birchbark Lake..... | 227,468 | 183,208 | 111,793 | 61.01 | 9,864 | 5,904 | 9,233 |
| H/12 Emma Lake..... | 227,468 | 108,764 | 74,890 | 68.85 | 2,354 | 965 | 128 |
| H/13 Bittern Lake..... | 226,105 | 225,570 | 127,968 | 56.73 | 28,126 | 10,457 | 89 |
| H/14 Candle Lake..... | 226,105 | 226,105 | 124,187 | 54.92 | 14,726 | 17,620 | 889 |
| H/15 White Gull Creek..... | 226,105 | 226,105 | 106,320 | 47.02 | 18,387 | 70,013 | 5,699 |
| H/16 Falling Horse Creek..... | 226,105 | 226,105 | 95,092 | 42.02 | 14,543 | 13,607 | 266 |
| | | | | | | | 12,100 |
| I/1 Scarth River..... | 224,810 | 224,810 | 76,195 | 33.89 | 34,350 | 21,529 | 8,701 |
| I/2 Summit Lake..... | 224,810 | 224,810 | 153,977 | 68.49 | 28,833 | 79,970 | 3,404 |

| | | | | | | | | | |
|-------------|--------------------------|-----------|-----------|-------|---------|---------|-----------|---------|---------|
| I/3 | White Swan Lake..... | 224,810 | 172,583 | 76.76 | 14,463 | 24,035 | 127,837 | 6,111 | 137 |
| I/4 | Montreal Lake South..... | 224,810 | 122,211 | 58.15 | 29,638 | 11,491 | 72,778 | 8,195 | 109 |
| I/5 | Montreal Lake North..... | 223,471 | 107,701 | 48.19 | 8,681 | 12,989 | 80,960 | 5,071 | ..... |
| I/6 | East Trout Lake..... | 223,471 | 145,865 | 65.29 | 21,417 | 9,162 | 110,764 | 4,395 | 127 |
| I/7 | Little Bear Lake..... | 223,471 | 137,449 | 61.50 | 72,935 | 9,677 | 21,861 | 14,791 | 18,185 |
| I/8 | Big Sandy Lake..... | 223,471 | 117,111 | 52.40 | 62,969 | 59 | 19,406 | 7,739 | 26,938 |
| I/9 | Wapawekka Hills..... | 222,094 | 119,713 | 53.90 | 73,240 | 34,293 | 8,830 | 2,847 | 503 |
| I/10 | Wuchewin River..... | 222,094 | 99,768 | 44.92 | 69,097 | 11,147 | 14,476 | 5,048 | ..... |
| I/11 | Nieeyomoot River..... | 222,094 | 78,417 | 35.30 | 31,685 | 26,456 | 13,570 | 3,068 | 3,638 |
| I/12 | Montreal Rapids..... | 222,094 | 87,024 | 39.18 | 35,325 | 22,063 | 22,109 | 4,647 | 2,880 |
| I/13 | Montreal River..... | 220,749 | 83,412 | 37.78 | 23,134 | 24,953 | 15,677 | 9,041 | 10,607 |
| I/14 | Potato Lake..... | 220,749 | 59,007 | 26.73 | 17,995 | 17,056 | 16,408 | 6,519 | 1,029 |
| I/15 | Wapawekka Lake..... | 220,749 | 79,780 | 36.14 | 26,730 | 22,422 | 17,964 | 11,577 | 1,087 |
| I/16 | Wapawekka Narrows..... | 220,749 | 130,575 | 59.15 | 69,030 | 15,386 | 37,190 | 8,969 | ..... |
| J/5 | Green Lake North..... | 134,707 | 74,813 | 55.53 | 7,754 | 750 | 25,098 | 41,844 | 117 |
| J/6 | Sled Lake..... | 223,471 | 106,804 | 47.79 | 5,065 | 4,316 | 75,596 | 25,306 | 87 |
| J/7 | Clarke Lakes..... | 186,740 | 73,220 | 39.20 | 13,134 | 47,051 | 33,026 | 10,167 | 12,577 |
| J/8 | Musquash Lake..... | 155,901 | 110,115 | 70.63 | 15,123 | 37,807 | 37,847 | 5,215 | 4,87 |
| J/9 | Randall Lake..... | 222,094 | 153,479 | 69.10 | 40,937 | 37,507 | 51,862 | 23,173 | ..... |
| J/10 | Smoothstone Lake..... | 222,094 | 101,385 | 45.64 | 19,700 | 7,202 | 30,909 | 42,724 | 856 |
| J/11 | Dore Lake South..... | 222,094 | 83,578 | 37.63 | 13,910 | ..... | 37,880 | 31,788 | ..... |
| J/12 | Bazill Bay..... | 222,094 | 100,485 | 45.24 | 8,931 | 986 | 28,267 | 62,203 | ..... |
| J/13 | Durocher Lake..... | 166,171 | 90,110 | 54.92 | 13,130 | 17,416 | 32,201 | 32,363 | 98 |
| J/14 | Dore Lake North..... | 166,171 | 53,639 | 32.27 | 16,040 | 4,664 | 26,546 | 6,359 | 30 |
| J/15 | Swan Lakes..... | 166,171 | 104,231 | 62.72 | 10,364 | 666 | 19,389 | 14,095 | 59,717 |
| J/16 | Two Forks River..... | 166,171 | 79,907 | 48.08 | 23,212 | 25,959 | 5,827 | 1,867 | 23,042 |
| TOTALS..... | | 8,768,699 | 4,325,325 | 49.35 | 995,577 | 762,833 | 1,550,971 | 747,303 | 268,641 |

TABLE 4—SAWTIMBER VOLUME BY SPECIES AND STAND-SIZE CLASSES IN PROVINCIAL FORESTS OF THE PRINCE ALBERT AREA: 1951

(In thousands of board feet)

| Species | In all areas | | In Sawtimber area | In Cordwood area |
|-----------------------|--------------|-----------|-------------------|------------------|
| | Amount | Per cent. | Over 70 feet high | 30 to 70 feet |
| TOTAL SAWTIMBER..... | 3,938,269 | 100.0 | 1,290,975 | 2,647,294 |
| Softwoods, total..... | 1,812,834 | 46.0 | 473,623 | 1,339,211 |
| White spruce..... | 954,066 | 24.2 | 438,984 | 515,082 |
| Black spruce..... | 240,218 | 6.1 | 10,075 | 230,143 |
| Jack pine..... | 526,918 | 13.4 | 9,154 | 517,764 |
| Balsam fir..... | 77,641 | 2.0 | 15,410 | 62,231 |
| Tamarack..... | 13,991 | .3 | | 43,991 |
| Hardwoods, total..... | 2,125,435 | 54.0 | 817,352 | 1,308,083 |
| White poplar..... | 1,265,813 | 32.1 | 307,523 | 958,290 |
| Black poplar..... | 698,813 | 17.7 | 447,694 | 251,119 |
| White birch..... | 66,606 | 1.7 | 19,558 | 47,048 |
| Elm..... | 77,785 | 2.0 | 37,497 | 40,288 |
| Manitoba maple..... | 14,620 | .4 | 4,075 | 10,545 |
| Green ash..... | 1,798 | .1 | 1,005 | 793 |

TABLE 5—CORDWOOD VOLUME BY SPECIES AND STAND-SIZE CLASSES IN PROVINCIAL FORESTS OF THE PRINCE ALBERT AREA: 1951

(In thousands of cords)

| Species | In all areas | | In Sawtimber area | In Cordwood area | In Reproduction area |
|-----------------------|--------------|-----------|-------------------|------------------|----------------------|
| | Amount | Per cent. | Over 70 feet high | 30 to 70 feet | Under 30 feet |
| TOTAL CORDWOOD | 32,440 | 100.0 | 810 | 29,551 | 2,079 |
| Softwoods, total..... | 22,669 | 69.9 | 356 | 20,514 | 1,799 |
| White spruce..... | 2,278 | 7.0 | 201 | 2,073 | 4 |
| Black spruce..... | 10,545 | 32.5 | 40 | 9,259 | 1,246 |
| Jack pine..... | 8,569 | 26.4 | 36 | 8,284 | 249 |
| Balsam fir..... | 705 | 2.2 | 78 | 624 | 3 |
| Tamarack..... | 572 | 1.8 | 1 | 274 | 297 |
| Hardwoods, total..... | 9,771 | 30.1 | 454 | 9,037 | 280 |
| White poplar..... | 7,299 | 22.5 | 264 | 6,903 | 132 |
| Black poplar..... | 790 | 2.4 | 62 | 645 | 83 |
| White birch..... | 1,484 | 4.6 | 25 | 1,394 | 65 |
| Manitoba maple..... | 142 | .4 | 71 | 71 | ..... |
| Green ash..... | 5 | ..... | 2 | 3 | ..... |
| Elm..... | 51 | .2 | 30 | 21 | ..... |

TABLE 6—CUBIC FOOT VOLUME BY SPECIES AND TREE DIAMETER GROUPS IN
PROVINCIAL FORESTS OF THE PRINCE ALBERT AREA: 1951

(In thousands of cubic feet)

| Species | All diameters | | Diameter groups | |
|-----------------------|---------------|-----------|-----------------|-----------------------|
| | Amount | Per cent. | 4-9 inches | 10 inches and over |
| ALL SPECIES..... | 3,507,586 | 100.0 | 2,754,607 | 752,979 |
| Softwoods, total..... | 2,292,712 | 65.36 | 1,923,904 | 368,808 |
| White spruce..... | 370,231 | 10.55 | 193,602 | 176,629 |
| Black spruce..... | 941,939 | 26.85 | 894,923 | 47,016 |
| Jack pine..... | 851,773 | 24.29 | 726,963 | 124,810 |
| Balsam fir..... | 77,161 | 2.20 | 59,879 | 17,282 |
| Tamarack..... | 51,608 | 1.47 | 48,537 | 3,071 |
| Hardwoods, total..... | 1,214,874 | 34.64 | 830,703 | 384,171 |
| White poplar..... | 839,752 | 23.94 | 620,441 | 219,311 |
| Black poplar..... | 201,495 | 5.74 | 67,152 | 134,343 |
| White birch..... | 139,363 | 3.98 | 126,174 | 13,189 |
| Green ash..... | 888 | .02 | 459 | 429 |
| Manitoba maple..... | 14,794 | .43 | 12,118 | 2,676 |
| Elm..... | 18,582 | .53 | 4,359 | 14,223 |

TABLE 7—AVERAGE VOLUME PER ACRE OF PRODUCTIVE FOREST BY STAND SIZE-
CLASSES AND TREE DIAMETER GROUPS IN PROVINCIAL FORESTS OF THE PRINCE
ALBERT AREA: 1951

| Stand-size class | All diameters (cubic feet) | Diameter groups-inches | |
|-----------------------|-------------------------------|------------------------|------------------------------------|
| | | 4-9 inches (cords) | 10 inches and over (board feet) |
| ALL SIZE CLASSES..... | 811 | 7.5 | 910 |
| Sawtimber..... | 2,425 | 6.5 | 10,341 |
| Cordwood..... | 1,271 | 12.4 | 1,111 |
| Reproduction..... | 114 | 1.3 | |

TABLE 8—WOOD VOLUME IN PROVINCIAL FORESTS OF THE PRINCE ALBERT AREA BY MAP SHEETS: 1951

| Map Sheet | Thousands of Board Feet | | | Thousands of Cords | | | Thousands of Cubic Feet | | |
|-------------------------------|-------------------------|----------|---------|--------------------|----------|-------|-------------------------|----------|----------|
| | Softwood | | Total | Softwood | | Total | Softwood | | Hardwood |
| | Total | Hardwood | | Total | Hardwood | | Total | Hardwood | |
| E/10 Sipanok Channel..... | 139,353 | 39,898 | 99,455 | 170 | 85 | 85 | 38,625 | 13,435 | 25,190 |
| E/11 Tobin Rapids..... | 109,194 | 44,212 | 64,982 | 86 | 44 | 42 | 25,789 | 10,486 | 15,303 |
| E/12 Pemman Point..... | 133,320 | 61,487 | 71,833 | 689 | 395 | 294 | 80,517 | 42,646 | 37,871 |
| E/13 Mississkiow River..... | 26,845 | 20,337 | 6,508 | 331 | 294 | 37 | 33,471 | 29,132 | 4,339 |
| E/14 New Channel..... | 212,456 | 60,011 | 152,445 | 366 | 264 | 102 | 71,268 | 34,830 | 36,438 |
| E/15 Old Channel..... | 267,160 | 47,168 | 219,992 | 175 | 40 | 135 | 62,277 | 11,234 | 51,043 |
| E/16 Cumberland House..... | 186,856 | 35,493 | 151,363 | 131 | 40 | 91 | 44,429 | 9,349 | 35,080 |
| H/2 Fairy Glen..... | 33,786 | 22,444 | 11,342 | 504 | 324 | 180 | 50,331 | 32,895 | 17,436 |
| H/3 Weldon..... | 3,542 | 2,369 | 1,173 | 46 | 35 | 11 | 4,714 | 3,572 | 1,142 |
| H/6 Weirdale..... | 8,557 | 7,700 | 857 | 114 | 99 | 15 | 11,641 | 10,186 | 1,455 |
| H/7 Smeaton..... | 57,840 | 49,371 | 8,469 | 855 | 684 | 171 | 85,844 | 69,570 | 16,274 |
| H/8 Nipawin..... | 22,002 | 16,192 | 5,810 | 304 | 193 | 111 | 30,547 | 20,033 | 10,514 |
| H/9 Torch River..... | 85,298 | 36,028 | 49,270 | 413 | 177 | 236 | 51,006 | 22,026 | 28,980 |
| H/10 Harper Lake..... | 15,490 | 9,955 | 5,535 | 290 | 239 | 51 | 27,934 | 22,607 | 5,327 |
| H/11 Birchbark Lake..... | 59,916 | 25,329 | 34,587 | 463 | 241 | 222 | 50,652 | 25,623 | 25,029 |
| H/12 Emma Lake..... | 40,128 | 15,004 | 25,124 | 320 | 120 | 200 | 34,718 | 13,238 | 21,480 |
| H/13 Bittern Lake..... | 81,190 | 41,509 | 39,681 | 765 | 511 | 254 | 80,531 | 51,796 | 28,735 |
| H/14 Candle Lake..... | 104,542 | 56,933 | 47,609 | 695 | 519 | 176 | 78,747 | 55,263 | 23,484 |
| H/15 White Gull Creek..... | 53,788 | 46,895 | 6,893 | 1,029 | 932 | 97 | 99,549 | 90,063 | 9,486 |
| H/16 Falling Horse Creek..... | 70,064 | 44,480 | 25,584 | 569 | 432 | 137 | 62,027 | 45,824 | 16,203 |
| I/1 Scarth River..... | 32,170 | 22,848 | 9,322 | 797 | 688 | 109 | 74,457 | 63,605 | 10,852 |
| I/2 Summit Lake..... | 109,240 | 69,123 | 40,117 | 1,724 | 1,390 | 334 | 169,056 | 133,562 | 35,494 |
| I/3 White Swan Lake..... | 87,417 | 41,126 | 46,291 | 770 | 540 | 230 | 82,253 | 54,194 | 28,059 |
| I/4 Montreal Lake South..... | 62,221 | 34,760 | 27,461 | 703 | 523 | 180 | 71,629 | 51,464 | 20,165 |
| I/5 Montreal Lake North..... | 54,528 | 26,325 | 28,203 | 465 | 283 | 182 | 49,765 | 29,296 | 20,469 |
| I/6 East Trout Lake..... | 57,275 | 37,857 | 19,418 | 591 | 453 | 138 | 61,362 | 46,247 | 15,115 |

| | | | | | | | | | |
|-----------------------------|-----------|-----------|-----------|--------|--------|-------|-----------|-----------|-----------|
| I/7 Little Bear Lake..... | 55,759 | 30,735 | 25,024 | 1,170 | 946 | 224 | 110,363 | 86,832 | 23,531 |
| I/8 Big Sandy Lake..... | 79,429 | 48,688 | 30,741 | 1,152 | 916 | 236 | 113,304 | 87,889 | 25,415 |
| I/9 Wapawekka Hills..... | 23,462 | 20,283 | 3,179 | 930 | 857 | 73 | 84,132 | 77,360 | 6,772 |
| I/10 Wuchewun River..... | 32,009 | 22,976 | 9,033 | 847 | 717 | 130 | 78,488 | 65,857 | 12,631 |
| I/11 Meeyomoot River..... | 44,802 | 32,453 | 12,349 | 707 | 618 | 89 | 69,358 | 59,555 | 9,803 |
| I/12 Montreal Rapids..... | 43,496 | 30,331 | 13,165 | 851 | 724 | 127 | 81,382 | 68,173 | 13,209 |
| I/13 Montreal River..... | 71,037 | 45,210 | 25,827 | 888 | 685 | 203 | 89,694 | 67,934 | 21,760 |
| I/14 Potato Lake..... | 57,577 | 39,078 | 18,499 | 692 | 547 | 145 | 70,318 | 54,674 | 15,644 |
| I/15 Wapawekka Lake..... | 59,441 | 36,926 | 22,515 | 871 | 644 | 227 | 86,042 | 62,737 | 23,305 |
| I/16 Wapawekka Narrows..... | 54,143 | 38,307 | 15,836 | 1,111 | 913 | 198 | 105,419 | 85,738 | 19,681 |
| I/5 Green Lake North..... | 90,096 | 25,434 | 64,662 | 514 | 171 | 343 | 60,639 | 19,588 | 41,051 |
| J/6 Sled Lake..... | 121,348 | 42,385 | 78,963 | 805 | 345 | 460 | 90,786 | 37,597 | 53,189 |
| J/7 Clarke Lakes..... | 39,586 | 17,102 | 22,484 | 433 | 285 | 148 | 44,527 | 27,750 | 16,777 |
| J/8 Musquash Lake..... | 58,801 | 39,664 | 19,137 | 1,016 | 839 | 177 | 98,758 | 80,212 | 18,546 |
| J/9 Randall Lake..... | 81,048 | 50,984 | 30,064 | 1,365 | 1,081 | 284 | 132,401 | 102,848 | 29,553 |
| J/10 Smoothstone Lake..... | 179,738 | 69,228 | 110,510 | 1,411 | 592 | 819 | 153,399 | 63,907 | 89,492 |
| J/11 Dore Lake South..... | 191,415 | 80,986 | 110,429 | 1,059 | 392 | 667 | 125,706 | 48,888 | 76,818 |
| J/12 Bazill Bay..... | 160,982 | 42,383 | 118,599 | 808 | 240 | 568 | 98,727 | 28,752 | 69,975 |
| J/13 Durocher Lake..... | 82,150 | 22,869 | 59,281 | 616 | 304 | 312 | 68,038 | 30,571 | 37,467 |
| J/14 Dore Lake North..... | 137,100 | 61,720 | 75,380 | 530 | 342 | 188 | 70,755 | 40,932 | 29,823 |
| J/15 Swan Lakes..... | 104,260 | 52,610 | 51,650 | 491 | 229 | 262 | 61,759 | 30,034 | 31,725 |
| J/16 Two Forks River..... | 56,412 | 47,628 | 8,784 | 808 | 737 | 71 | 80,452 | 72,708 | 7,744 |
| TOTALS..... | 3,938,269 | 1,812,834 | 2,125,435 | 32,440 | 22,669 | 9,771 | 3,507,586 | 2,292,712 | 1,214,874 |

TABLE 9—PERIODIC ANNUAL VOLUME INCREMENT BY SPECIES AND TREE DIAMETER GROUPS IN THE PRINCE ALBERT AREA: 1951

| Species | All diameters | | Diameter groups-inches | |
|-----------------------|-------------------------|-----------|----------------------------------|--|
| | Thousands of cubic feet | Per Cent. | 4-9 inches Thousands of cords | 10 inches and over Thousands of board feet* |
| ALL SPECIES..... | 99,789 | 100.0 | 1,020 | 65,338 |
| Softwoods, total..... | 66,687 | 66.8 | 706 | 33,598 |
| White spruce..... | 7,229 | 7.2 | 55 | 12,686 |
| Black spruce..... | 26,707 | 26.8 | 300 | 6,080 |
| Jack pine..... | 29,921 | 30.0 | 322 | 12,924 |
| Balsam fir..... | 1,595 | 1.6 | 15 | 1,726 |
| Tamarack..... | 1,235 | 1.2 | 14 | 182 |
| Hardwoods, total..... | 33,102 | 33.2 | 314 | 31,740 |
| White poplar..... | 24,508 | 24.6 | 227 | 25,897 |
| Black poplar..... | 4,091 | 4.1 | 37 | 4,647 |
| White birch..... | 4,496 | 4.5 | 50 | 1,186 |
| Elm..... | 3 | ... | ... | ... |
| Green ash..... | ... | ... | ... | ... |
| Manitoba maple..... | 4 | ... | ... | 10 |

*—Cubic feet converted to board feet, basis one cubic foot equal to five board feet.

METHODS OF SURVEY



The area estimates given in this report are based on 100 per cent air photo type-mapping of all land in Provincial Forests in the survey area. Photos used were summer verticals taken in the period 1945-1952.

Productive forest land was mapped on the basis of softwood, mixedwood, and hardwood types and in four levels each of crown density and average height of dominant stand, with additional classes of disturbed stands being recognized. Spruce and pine types were differentiated in the softwoods.

One-fifth acre plots were located at random or along random lines apportioned among all the cover types mapped. There were 1,509 usable plots located and measured from 1948 to 1952

in the Prince Albert area. In addition 343 one-tenth acre plots in jack pine types measured in 1951 were used.

Local volume tables were prepared from appropriate standard tables. These volume tables were checked against the volumes of felled sample trees. Cull factors were based on the rot found in the randomized sample trees, which were cut down and bucked into 8 foot bolts. Average stand volumes were applied to the cover maps to produce the estimates in terms of net merchantable volume.

The statements on current growth are based on rates of growth developed in a series of special growth studies. Mixed stand growth figures were derived from empirical stand density yield tables based on 326 one-fifth acre plots. Figures for black spruce arose out of empirical yield tables for well-stocked stands based on the measurement of 150 one-fifth acre plots. Jack pine growth was calculated by the stand table method, forecasting the stand ten years hence through the use of increment borings and mortality records taken on 715 one-tenth acre plots. In all cases the results of the special growth studies were adapted to fit the stand tables which resulted in the course of the forest inventory volume sampling.

ACCURACY OF DATA

Inaccuracies in the forest inventory estimates for the Prince Albert Area arise from two sources — errors in measurement and errors due to the accidents of sampling. Care was taken to minimize errors of measurement on the air photos and in the field. A proportion of the forest classification was verified in the field and all computations received a mechanical check. The error due to sampling can be described quantitatively.

On analysis it was found that the sampling error for 96 per cent of the merchantable stand volume in the Prince Albert area was + or — 2.2 per cent. Such a statement means that the total merchantable volume for the Area is within 2.2 per cent of the stated volume (barring errors in measurement), two chances out of three. On the basis of a probability of 19 chances out of 20, this per cent becomes + or — 4.3. The sampling error calculation represents the pooled sampling errors of three sampling blocks making up the Prince Albert Area, each in turn made up of numerous strata. These sampling error per cents apply to 3,371 million cubic feet and to over 3.5 million acres of productive forest land. The sampling error could not be formulated for the remaining volume and area, found largely in unmerchantable stands. The reliability of volumes for particular species and localities is less as the volumes and acreages involved become smaller. Such sub-totals serve to show relative but not absolute magnitudes. They should not be regarded as having the accuracy of the totals for the whole Area.

DEFINITION OF TERMS

Volume Classification

Sawtimber—Volume contained in trees 9.6 inches and over (diameter breast high) regardless of stand-size class in which they occur, expressed in board feet, International $\frac{1}{4}$ " scale.

Cordwood—Volume of solid wood inside bark contained in trees 3.6 to 9.5 inches in diameter, expressed in standard cords of 128 cubic feet of stacked rough wood.

Cubic Foot Volume—Volume of solid wood inside bark of all trees 3.6 inches in diameter and over.

Limits of Merchantability

For Sawtimber—Stump one foot, variable top diameter inside bark averaging 6 inches.

For Cordwood—Stump one foot, top diameter inside bark 3 inches.

Net Merchantable Volume—Merchantable volume of sound wood. Deductions for cull based on averaged measurements of felled sample trees. Volumes in this report are net merchantable.

DEFINITION OF TERMS

Area Classification

FOREST LAND AREA

Productive Forest—Land which will produce a forest crop of merchantable size and form within a reasonable period of time.

Non-Productive Forest—Land incapable of producing a forest crop of merchantable size within a reasonable period of time. Includes treed muskegs and a proportion of softwood stands judged to be stagnant.

Non-Forested—Includes open swamps, grassland, brush, rock, cultivated land and urban areas.

STAND-SIZE CLASSES

Sawtimber Area—Stands over 70 feet in height.

Cordwood Area—Stands averaging 30 to 70 feet in height.

Reproduction Area—Stands under 30 feet in height.

COVER TYPES

Softwood—Stands containing over 75 per cent softwoods by volume.

Mixedwood—Stands in which neither softwoods or hardwoods constitute 75 per cent of the stand volume.

Hardwood—Stands containing over 75 per cent hardwoods by volume.

MERCHANTABILITY

Merchantable—Stands over 30 feet in height.

Young Growth—Stands on productive forest land under 30 feet in height.

LIST OF SPECIES

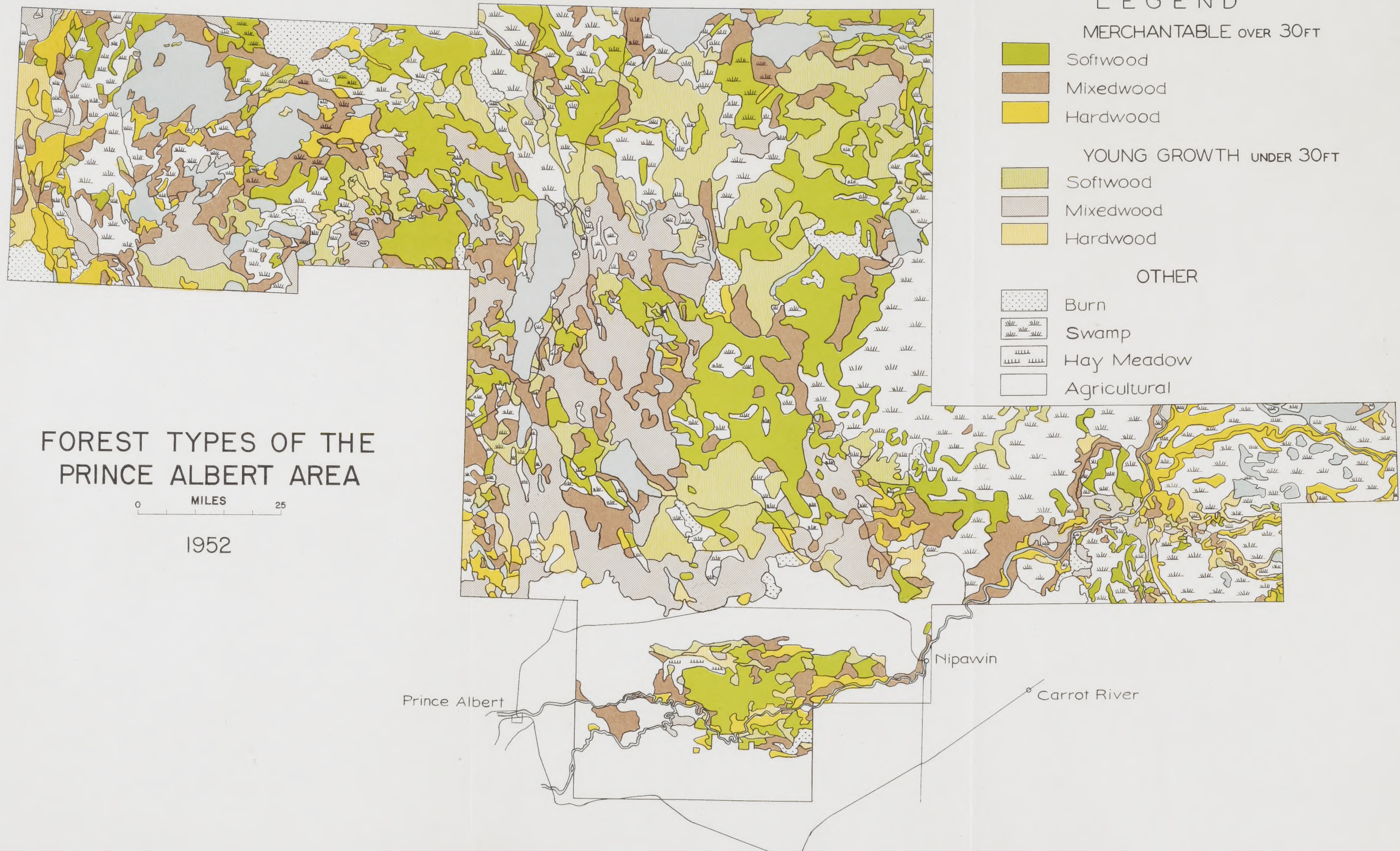
SOFTWOODS

| | | |
|--------------|---|---|
| White spruce | — | <i>Picea glauca</i> (Moench) Voss. |
| Black spruce | — | <i>Picea mariana</i> (Mill.) B.S.P. |
| Jack pine | — | <i>Pinus Banksiana</i> Lamb |
| Balsam fir | — | <i>Abies balsamea</i> (L.) Mill. |
| Tamarack | — | <i>Larix laricina</i> (Du Roi) K. Koch. |

HARDWOODS

| | | |
|----------------|---|---|
| White poplar | — | <i>Populus tremuloides</i> Michx. |
| Black poplar | — | <i>Populus balsamifera</i> L. |
| White birch | — | <i>Betula papyrifera</i> Marsh. |
| Green ash | — | <i>Fraxinus pennsylvanica</i> Marsh. var. <i>lanceolata</i> (Borkh.) Sarg. |
| Manitoba maple | — | <i>Acer Negundo</i> L. var. <i>interius</i> (Britton) Sarg. |
| White elm | — | <i>Ulmus americana</i> L. |





SD 2 S25 S252 NO-2 1953
SASKATCHEWAN FOREST INVENTORY
DIVISION
FOREST INVENTORY SERIES
SERIAL M1 39648604 SCI



000040546640

DATE DUE SLIP

| | |
|--|--|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

SD 2 S25 S252 no.2, 1953
Saskatchewan. Forest Inventory
Division.
Forest inventory series
39648604 SCI

ONE WEEK LOAN

B42894

